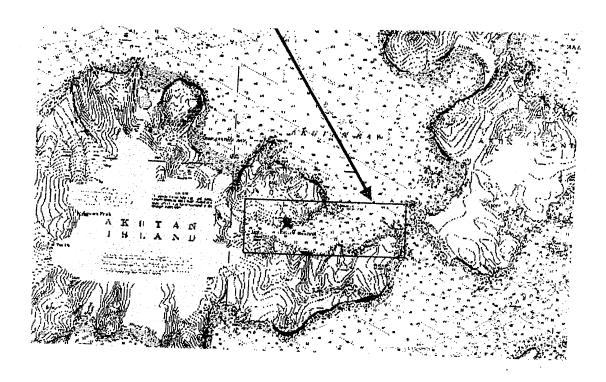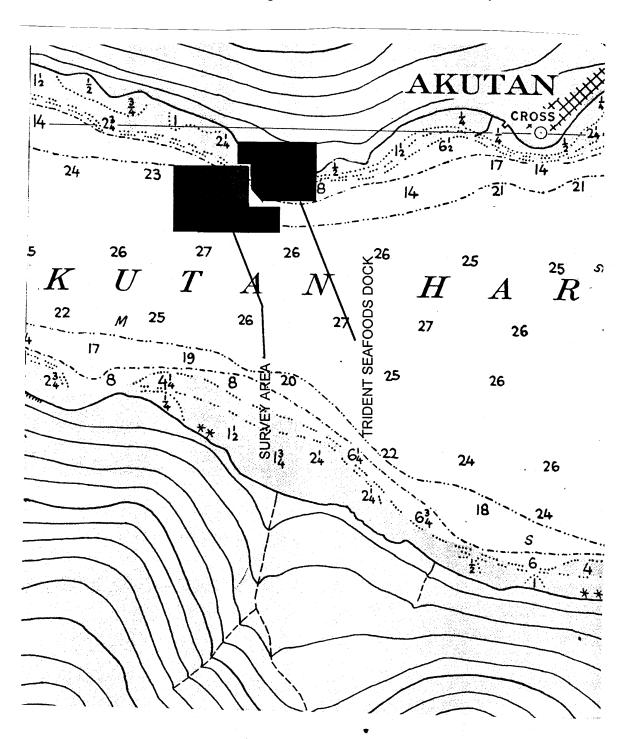APPENDIX A - Location of the Trident - Akutan facility

APPENDIX B - Diagram of the Trident - Akutan facility

APPENDIX C - Synopsis of Modeling the Discharge of Settleable Solid Seafood Residues

TECHNICAL BRIEF FOR EXPANDED SEAFOOD MODEL RUNS
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In support of the development of a general NPDES permit for shore-based, near shore, and offshore seafood processors, Tetra Tech prepared an ocean discharge criteria evaluation (ODCE) report in July 1994. The report concentrated on characterizing the effluent being discharge from the covered facilities and its potential effect on receiving waters. The report also developed preliminary modeling predictions for the deposition of solid seafood waste residues on the sea floor.

Technical directive No. 12 directed Tetra Tech to expand the modeling assessment of the deposition of settleable solid seafood waste residues from processors using different particle size assumptions. Tetra Tech was also directed to determine endpoints for maximum discharges which produce deposition areas of zero, one, and two acres using the case scenarios defined in the previous ODCE.

To accomplish this task, three general cases were modeled (i.e., 0.5 inch, 0.38 inch, and 0.04 inch maximum particle size) and the results are presented in Tables 1, 2, and 3, respectively. No changes in the WASP5 model were required to perform these model simulations, however, the input files used for each model run were modified as needed and are described below. Results of the predicted areal coverage of solid wastes for both the WASP output, based on the number and area of grids, and SURFER, based on contours of depth accumulation, are reported. In general, the determination of the endpoints for maximum discharges that produce zero, one, and two acre waste piles are based on the areas estimated by SURFER, the 3-dimensional contouring software.

Table 1 depicts the area and thickness of a waste pile which results from discharging seafood waste solids that have been ground to a maximum particle size of 0.5 inch. The assessment assumes that 60% of the loading mass of particles is 0.5" in diameter, 20% is 0.25", and 20% is 0.125".

Table 2 depicts the area and thickness of a waste pile which results from discharging seafood waste solids that have been ground to a maximum particle size of 0.375 inch. The assessment assumes that 60% of the loading mass of particles is 0.375" in diameter, 20% is 0.188", and 20% is 0.094".

Table 3 depicts the area and thickness of a waste pile which results from discharging seafood waste solids that have been ground to a maximum particle size of 0.04 inch (= 1 mm). The assessment assumes that 100% of the loading mass of particles is 0.04" in.

TABLE 1. SEAFOOD WASTE ACCUMULATION MODEL RESULTS FOR MAXIMUM PARTICLE SIZE OF 1.27 CM (0.5 IN)						
Case #[a]	Net-Drift Current Speed (cm/sec)	Water Depth (m)	Bottom Slope (%)	Waste Solids Discharge Rate (lb/yr wet weight)	Maximum Waste Accumulation Depth (cm)	Areal Coverage (acres)
						S[b]	W[c]
Near-Bottom Shore-Based Discharges							
1	5.0	15.2	0.0	200,000 16,000,000 100,000,000	2.9 230 1,435	0.0 1.0 1.8	0.1 0.8 1.3
2	15.0	15.2	0.0	200,000 12,000,000 40,000,000	2.2 133 445	0.0 1.2 2.1	0.1 1.0 1.4
3	5.0	15.2	12.5	100,000 20,000,000 100,000,000	1.4 230 1,438	0.0 1.0 1.8	0.1 0.8 1.4
4	15.0	15.2	12.5	100,000 16,000,000 40,000,000	1.1 179 446.4	0.0 1.3 2.1	0.1 1.1 1.4
5	5.0	15.2	25.0	20,000,000	288	1.0	0.8
6	15.0	15.2	25.0	16,000,000	179	1.3	1.1
Near-Surface Floating Discharges in Open Ocean							
7	5.0	15.2	0.0	200,000 8,000,000 20,000,000	1.8 63.4 176.2	0.0 1.0 2.0	0.1 0.8 1.4
8	15.0	15.2	0.0	300,000 4,000,000 10,000,000	1.4 19.2 48.0	0.0 1.2 2.0	0.2 0.6 1.9
9	5.0	30.5	0.0	300,000 4,000,000 10,000,000	1.8 24.2 60.5	0.0 1.1 2.0	0.2 0.9 1.4
10	15.0	30.5	0.0	400,000 4,000,000 11,000,000	1.2 12.3 44.8	0.0 1.3 2.0	0.1 1.0 1.4
11	5.0	45.7	0.0	300,000 4,000,000 8,000,000	1.4 18.5 37.1	0.0 1.2 2.0	0.1 1.2 1.4
12	15.0	45.7	0.0	700,000 4,000,000 7,000,000	1.4 8.0 14.0	0.0 1.3 2.1	0.2 1.0 1.5

[a] Case numbers correspond to the case scenarios outlined in Table 3-5 of the ODCE.

[b] Area coverage of solid waste estimated by SURFER™.

[c] Area coverage of solid waste estimated using WASP output.

TABLE 2. SEAFOOD WASTE ACCUMULATION MODEL RESULTS FOR MAXIMUM PARTICLE SIZE OF 0.95 CM (0.38 IN)							
Case #[a]	Net-Drift Current Speed (cm/sec)	Water Depth (m)	Bottom Slope (%)	Waste Solids Discharge Rate (lb/yr wet weight)	Maximum Waste Accumulation Depth (cm)	Areal Coverage (acres)	
						s[b]	w[c]
Near-Bottom Shore-Based Discharges							
1	5.0	15.2	0.0	100,000	1.3	0.0	0.1
				16,000,000	215	1.1	0.8
				90,000,000	1,214	2.0	1.6
2	15.0	15.2	0.0	150,000	1.5	0.0	0.1
				6,000,000	60.1	1.0	0.3
				28,000,000	280.3	2.0	1.4
3	5.0	15.2	12.5	150,000	2.0	0.0	0.1
				16,000,000	216.6	1.0	0.8
				90,000,000	1,218	2.0	1.6
4	15.0	15.2	12.5	150,000	1.5	0.0	0.1
				6,000,000	60.1	1.0	0.3
				28,000,000	280.8	2.0	1.4
Near-Surface Floating Discharges in Open Ocean							
7	5.0	15.2	0.0	200,000	1.5	0.0	0.1
				4,000,000	30.4	1.0	0.8
				15,000,000	114.1	2.0	1.4
8	15.0	15.2	0.0	400,000	1.5	0.0	0.2
				3,000,000	11.4	1.1	0.6
				9,000,000	34.2	2.1	1.9
9	5.0	30.5	0.0	300,000	1.5	0.0	0.1
				3,000,000	15.0	1.0	0.7
				8,000,000	40.0	2.0	1.4
10	15.0	30.5	0.0	400,000	1.4	0.0	0.2
				3,000,000	10.5	1.1	0.6
				7,600,000	26.5	2.0	2.3
11	5.0	45.7	0.0	400,000	1.5	0.0	0.2
				3,000,000	11.2	1.0	0.9
				7,000,000	26.2	2.0	1.9
12	15.0	45.7	0.0	800,000	1.3	0.0	0.2
				3,500,000	5.6	1.1	1.0
				7,000,000	11.0	2.1	1.0

[a] Case numbers correspond to the case scenarios outlined in Table 3-5 of the ODCE.

[b] Area coverage of solid waste estimated by SURFER™.

[c] Area coverage of solid waste estimated using WASP output.

TABLE 3. SEAFOOD WASTE ACCUMULATION MODEL RESULTS FOR MAXIMUM PARTICLE SIZE OF 1.0 MM (0.04 IN)						
Case #[a]	Net-Drift Current Speed (cm/sec)	Water Depth (m)	Bottom Slope (%)	Waste Solids Discharge Rate (lb/yr wet weight)	Maximum Waste Accumulation Depth (cm)	Areal Coverage (acres)
						S[b]	W[c]
Near-Bottom Shore-Based Discharges							
1	5.0	15.2	0.0	500,000 3,000,000 8,000,000	1.1 15.7 41.7	0.0 1.0 2.0	0.1 0.9 1.4
2	15.0	15.2	0.0	600,000 3,000,000 7,000,000	1.5 7.5 17.6	0.0 1.0 2.1	0.2 0.6 1.5
3	5.0	15.2	12.5	300,000 3,000,000 8,000,000	1.6 15.8 42.1	0.0 1.0 2.0	0.1 0.8 1.4
4	15.0	15.2	12.5	600,000 3,000,000 7,000,000	1.5 7.6 17.7	0.0 1.0 2.1	0.2 0.6 1.3
Near-Surface Floating Discharges in Open Ocean							
7	5.0	15.2	0.0	1,000,000 3,500,000 6,000,000	1.1 4.0 6.8	0.0 1.1 2.0	0.2 0.6 2.1
8	15.0	15.2	0.0	3,000,000 6,000,000 8,500,000	1.3 2.6 3.7	0.0 1.0 2.0	0.5 1.0 1.9
9	5.0	30.5	0.0	2,000,000 5,000,000 8,000,000	1.2 2.9 4.7	0.0 1.0 2.2	0.2 0.6 2.1
10	15.0	30.5	0.0	3,000,000 7,000,000 10,000,000	1.1 2.6 3.7	0.0 1.0 2.0	0.3 1.0 1.5
11	5.0	45.7	0.0	3,000,000 7,000,000 10,000,000	1.2 2.3 3.9	0.0 1.0 2.1	0.2 1.0 1.9
12	15.0	45.7	0.0	9,000,000 16,000,000 20,000,000	1.3 2.3 2.9	0.0 1.0 2.0	0.9 1.9 1.9

[a] Case numbers correspond to the case scenarios outlined in Table 3-5 of the ODCE.

[b] Area coverage of solid waste estimated by SURFER™.

[c] Area coverage of solid waste estimated using WASP output.